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COMBATING TYPHUS FEVER ON THE MEXICAN BORDER.

By C. C. PIERCE, Senior Surgeon, United States Public Health Service.

Typhus fever has for many years been endemic in the plateau regions of Mexico, but attracted little attention in the United States until about a year ago.

The disturbed political conditions in Mexico for the past five years and the consequent migration of refugees, soldiers, and their families, with the attendant misery, poverty, and absolute lack of sanitary measures, have resulted in spreading typhus fever to all parts of Mexico, its prevalence in border towns near the States being a recognized menace.

Notwithstanding this wide distribution of the disease, it is largely limited to the class of the population which is suffering from extreme poverty and is vermin infested. The only other persons who have become infected with typhus are those who have come into contact with this class and doctors, nurses, and others whose duties have brought them into contact with persons actually ill with typhus.

During December, 1915, three cases of typhus were reported at Laredo, Tex., and the United States Public Health Service at once sent an officer to the border to institute measures for the prevention of the spread of typhus from Mexico to the United States. In order quickly to accomplish this purpose, abandoned disinfecting plants that were established years ago in Nuevo Laredo, Piedras Negras, and Juarez, Mexico, were rehabilitated and put into operation, so that clothing of louse-infested persons might be sterilized with steam, and their bodies bathed with soap and water before they were allowed to enter the States. At other ports temporary measures were carried out to limit the introduction of typhus. While these measures gave considerable protection, it was realized that in order to properly control the situation fully equipped disinfecting plants, with facilities for bathing, handling baggage, and sterilizing clothing, would have to be built on American territory at border ports, so that they might be operated entirely under American control. Construction of these quarantine stations has now been completed at El Paso, Eagle Pass, Brownsville, Hidalgo, and Rio Grande City, all in Texas. The plant at Laredo will soon be in operation.

The detailed method of treating persons arriving at the Mexican border to free them of lice will be briefly described, in order that health officers or others engaged in sanitation of labor camps, or of groups of persons likely to be louse infested, may know what is being done along the border.

Figure 1 shows the international bridge between Juarez and El Paso, the front end of the disinfecting plant, and Mexicans waiting to be de-loused.

Figure 2 shows the side view of the service plant and yard.

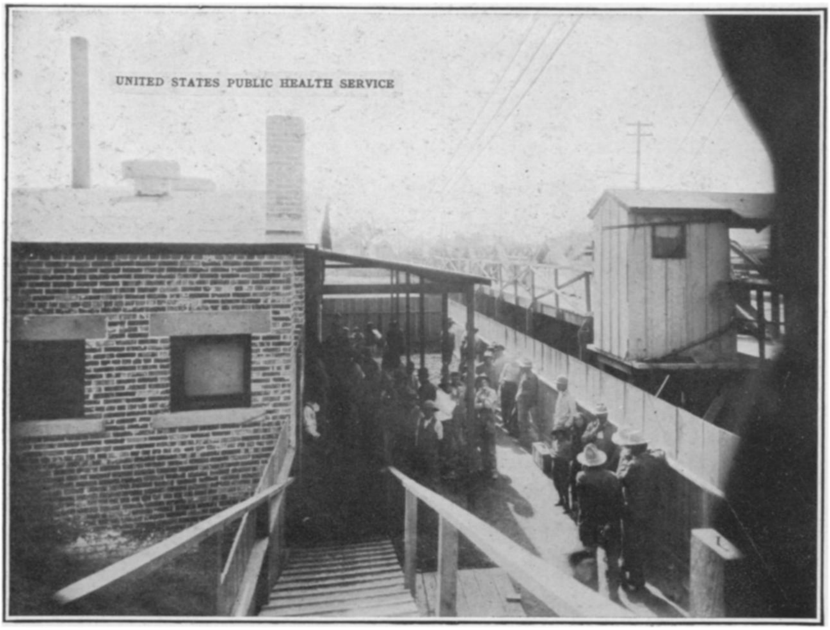

FIG. 1.—INTERNATIONAL BRIDGE, FRONT END OF EL PASO DISINFECTION STATION, AND MEXICANS WAITING TO BE DE-LOUSED.

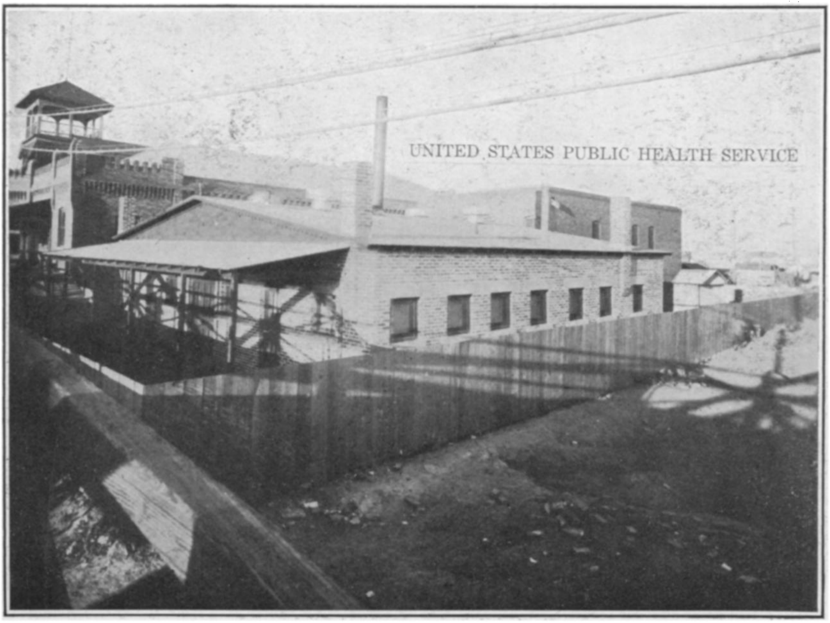

FIG. 2.—SIDE VIEW OF DISINFECTING PLANT AND YARD.

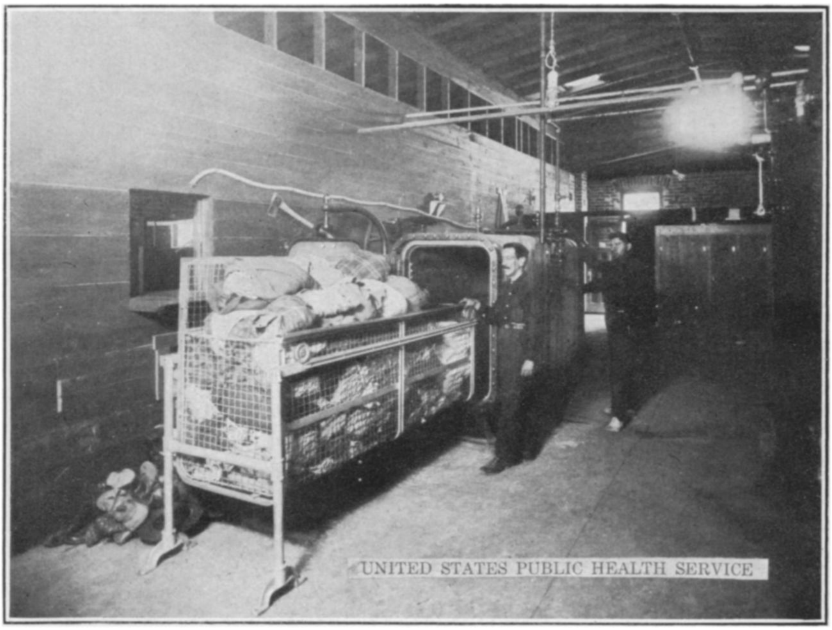

FIG. 3.—CLOTHING READY FOR DE-LOUSING BY STEAM.

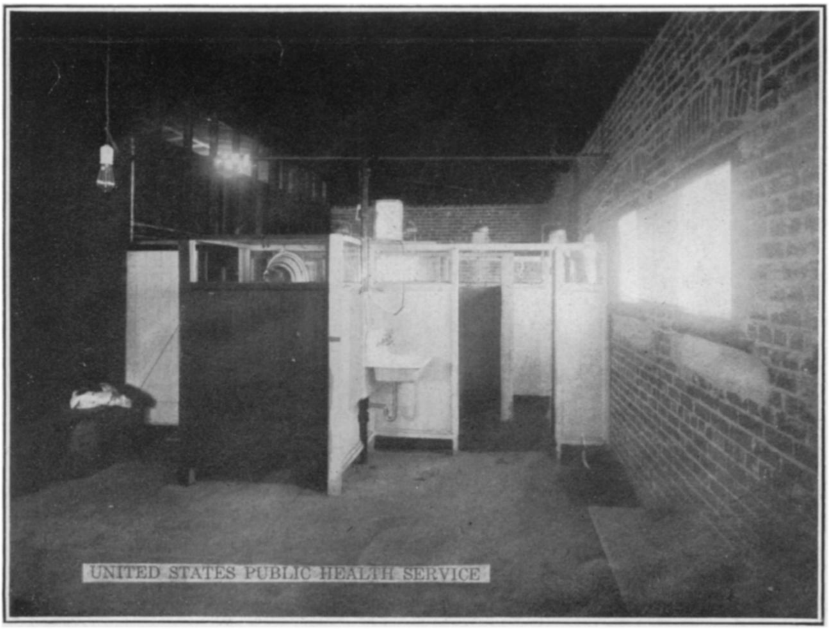

FIG. 4.—BATHS ON WOMEN'S SIDE OF PLANT, LOOKING FROM UNDRESSING ROOM.

All persons coming to El Paso from Mexico, considered as likely to be vermin infested, are sent through this plant for disinfection.

The men and women are separated, men entering one side of the building and women and small children the other. In suitable rooms all clothing is removed and pushed through an opening in the wall into the disinfecting room, where the bundles are placed in the steam-chamber carriage run out to receive them. Shoes, hats, belts, and other articles injured by steam are dropped through another opening into a large laundry basket, and when necessary are exposed to cyanogen. (Fig. 3.)

Persons having money or valuables place such articles in a small cotton bag tied with a string, having a numbered brass check attached. The duplicate number of this check is given to the owner on a cord, so that it can be put around the neck while bathing.

After all clothing has been removed and passed into the disinfecting room the naked person passes in front of a male or female attendant, as the sex requires, before entering the baths. This attendant examines the head to see if lice are present. If head lice are found, the hair of the men or boys is clipped with No. 00 clippers, the hair dropping on a newspaper, which is then rolled up and burned. Women with head lice have a mixture of equal parts of kerosene and vinegar applied to the head and hair for half an hour with a towel covering the head. The dilute acetic acid loosens the eggs from the hair and the kerosene kills or stupefies the adult lice, which are removed by washing the head and hair with warm water and soap. If necessary, the process is repeated to dislodge all eggs or nits.

After being passed by the attendant, liquid soap is sprayed upon the body from an elevated reservoir and the person proceeds to the baths. The soap container is a 5-gallon can with a spout in the bottom to which rubber tubing is attached, a clip similar to that on a fountain syringe controlling the spray. The soap is made by boiling 1 part of soap chips in 4 parts of water and then adding 2 parts of kerosene oil. This jellies when cold, and 1 part of this soap jelly is added to 4 parts of warm water, making a good liquid soap at very small cost.

The attendant watches the bathing process, and when the bath is finished the persons being treated pass into other rooms and wait for their clothing, which is handed back to them from the "clean end" of the steam chamber. No identification checks are placed on clothing bundles, each person picking out his own bundle.

When the clothes in bundles are passed into the disinfecting room they are at once placed in the carriage of the steam chamber, and as soon as this is filled the chamber is closed. A vacuum of 10 to 15 inches is created in the chamber and live steam is then introduced until the pressure gauge shows 20 pounds, which gives a temperature of 259° F. This is maintained for 10 minutes to insure penetration of all bundles, after which time the chamber is opened.

The creation of a second vacuum of 10 inches and holding it for 10 minutes will dry the clothes completely, but in the dry climate of El Paso this is unnecessary.

The time for sterilization of clothing is from 25 to 35 minutes, depending on the amount of clothing in the chamber. This process has been controlled by wrapping a thermometer inside bundles of clothing placed in different parts of the chamber load, top, bottom, middle, and ends, until the operator knows from experience exactly how long to expose the clothing. Lice and their eggs are killed by a very short exposure to 212° F., but the higher temperature is easily obtained and held to insure efficiency.

After the persons are dressed they pass into another room, where they reclaim any bundles they may have had. They are looked over by the foreman in charge of the plant, all are vaccinated, and the following certificate is given them:

UNITED STATES PUBLIC HEALTH SERVICE, MEXICAN BORDER QUARANTINE.

...., 191..

The bearer ....

Male }
Female } ...., age ...., has been this day deloused, bathed, vaccinated, clothing and baggage disinfected.

Has .... children under 10 years of age.

....

Surgeon, U. S. P. H. S.

Children under 10 years of age are not given certificates, but are mentioned on those given their parents.

From this "finishing room" the aliens are sent through the immigration building, where they receive their medical inspection and are properly disposed of by the United States Immigration Service.

At El Paso, bath water is heated by a coal-burning heater connected with a large tank. From this tank the hot water is led through a pipe which is joined to the cold-water pipe just before the shower heads branch off. A valve in both the hot and cold water pipes near this junction makes it possible for an attendant to regulate the temperature of water to the baths. The persons bathed do not understand modern plumbing and can not regulate the flow of hot and cold water through a mixing valve, so one valve at the shower always gives warm water. A better arrangement is to lead the hot water into a 100-gallon mixing tank, to which cold water is also led, the right temperature being maintained there by closing off cold or hot water as required and testing the temperature at a faucet provided therefor. From this mixing tank water is distributed to the showers through one pipe. This arrangement will be in operation at the Laredo plant.

The cyanide gas room is outside the main building at El Paso, but at other stations is inside the disinfecting room. Trunks, suit cases, and similar articles are treated with cyanogen, when necessary.

This treatment of baggage for the destruction of lice is not regarded as particularly important except in those cases where soiled clothing is contained in trunks or grips. It is done, however, so that every article carried in by immigrants will be brought to the disinfecting plant. All baggage treated at the plant is marked as follows:

UNITED STATES PUBLIC HEALTH SERVICE.

This piece of baggage disinfected this date:

....

As an additional precaution to prevent the spread of typhus from border towns to other parts of the United States, no Mexicans of the laboring class are allowed to leave a border town by train until they and their baggage have been treated at the disinfecting plant. All transportation companies are cooperating to see that this requirement is complied with, and an inspector of the United States Public Health Service is on duty at railway stations to assist in carrying out this regulation. Since the establishment of quarantine restriction at border ports, a noticeable improvement in the appearance of local passengers from neighboring Mexican towns has been observed as regards cleanliness of person and underclothing.

From the date of opening the service plant at El Paso, January 2 to February 9, 1917, 12,360 persons have been bathed, de-loused, and vaccinated at that port.

The measures now being carried out at the border by the United States Public Health Service, the cooperation of transportation companies, and the work of various State boards of health in sanitating railroad construction and other labor camps should control the spread of typhus fever from Mexico to the United States.